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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
TUROCY, DAVID P	
ART UNIT	PAPER NUMBER
1762	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/09/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/720,453	FUFLYIGIN, VLADIMIR	
	Examiner	Art Unit	
	David Turocy	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-43,47 and 49-81* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-41,47 and 49-81* is/are rejected.

7)☒ Claim(s) *42 and 43* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/16/06, 9/14/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendments, filed10/16/2006, have been reviewed and considered by the examiner. The examiner notes the amendment to claims 1, 36, 47, 62, 63, 65, and the addition of new claims 80 and 81. Claims 1, 3-43, 47 and 49-81 remain pending in the instant application.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 9/14/2006 and 6/16/2006 was filed after the mailing date of the non-final office action on 2/15/2006. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Response to Arguments

3. Applicant's arguments filed 9/14/2006 have been fully considered but they are not persuasive.

The applicants have argued against the examiners position of enablement for the entire scope of the claims, stating the specification is enabling for other first gas compositions other then the given example of nitrous oxide. The examiner does not agree. Considering the factors set forth in MPEP 2164.01(a), the breadth of the claim is open to all first gas composition that can be converted under a sufficient condition to deposit an oxide gas. The nature of the invention deals with waveguides and the

formation of an oxide glass onto a chalcogenide glass by way of changing a first compound to a second compound that forms the oxide. The prior art does not discuss conversion of a first gas to a second gas. The deposition requires conversion of one gas to another gas prior to depositing an oxide, which is highly unpredictable because it requires multiple gas reactions and formations of an intermediate and a final oxide film. While one ordinary in the art has high skill in the waveguide and glass art, the specification does not provide additional direction or working examples to one of ordinary skill in the art to provide any combination of various gases, each of which is within the scope of the claimed invention, wherein a first compound is subject to a condition sufficient to convert it to a second compound and thereafter deposit a oxide film. Taking all the above factors into consideration, the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims without undue experimentation.

The applicants have argued against the Blanc reference, stating the reference fails to disclose moving the plasma relative to the surface of the layer onto which the deposition of glass occurs, however, the examiner respectfully disagrees with such a statement. Blanc, at page 918, discloses a suitable system for forming a plasma deposited layer by supplying the gas flow through the tubular deposition chamber, wherein the rf power surrounds the quartz tube. As shown in fig. 1, Blanc teaches of pumping the gases through the tube and therefore Blanc suggests moving the plasma through the tubular deposition chamber and such would result in some degree of non-

normal movement. In response to applicant's arguments against Blanc individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Therefore, one would desire to modify either EP 085 or Ahmed with the teachings of Blanc to reap the benefits of depositing glasses with an increased range of composition and refractive modifiers. Also Blanc discloses known and suitable method of depositing chalcogenide and oxide glasses and the selection of something based on its known suitability for its intended use has been held to support a *prima facie* case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1, 3-35, 62, and 80-81 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The examiner cannot locate explicit or implicit disclosure of the claimed subject matter where the plasma is moved in a "direction non-normal to a surface of the first chalcogenide glass layer." The

examiner cannot locate support for such a claimed limitation in the original disclosure, however, if the applicant can provide support in the original disclosure, the examiner will withdraw the rejection.

6. Claims 36-41 and 63-68 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a first compound comprising nitrous oxide in order to deposit an oxide onto a chalcogenide, does not reasonably provide enablement for a first gas changed into a second gas to deposit an oxide on the substrate. Considering the factors set forth in MPEP 2164.01(a), the breadth of the claim is open to all first gas composition that can be converted under a sufficient condition to deposit an oxide gas. The nature of the invention deals with waveguides and the formation of an oxide glass onto a chalcogenide glass by way of changing a first compound to a second compound that forms the oxide. The prior art does not discuss conversion of a first gas to a second gas. The deposition requires conversion of one gas to another gas prior to depositing an oxide, which is highly unpredictable because it requires multiple gas reactions and formations of an intermediate and a final oxide film. While one ordinary in the art has high skill in the waveguide and glass art, the specification does not provide additional direction or working examples to one of ordinary skill in the art to provide any combination of various gases, each of which is within the scope of the claimed invention, wherein a first compound is subject to a condition sufficient to convert it to a second compound and thereafter deposit a oxide film. Taking all the above factors into consideration, the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly

connected, to use the invention commensurate in scope with these claims without undue experimentation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 3-13, 15-21, 23-25, 27, 29, 30-33, 35, 52, 59, and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 060085 (EP 085) in view of *Plasma-enhanced chemical vapor deposition of Ge-Se and Ge-S compound* by Blanc et al., hereafter Blanc

EP 085 is applied here for the same reasons as set forth in the prior office action dated 2/15/2006. EP 085 discloses use of a flame MCVD deposition process rather than an rf or microwave induced plasma method for depositing the glass.

However, Blanc discloses using PECVD rather then the conventional MCVD results in high deposition rates and discloses the range of compositions and the number of refractive modifiers are less limiting than in the MCVD method (Page 917 and 921). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify EP 085 to use the PECVD method as suggested by Blanc with a

reasonable expectation of success to reap the benefits of depositing glasses with an increased range of composition and refractive modifiers.

Claims 3-5, 7-9: Blanc discloses using rf or microwave induced plasma (Page 918 section 2.1).

Claims 13, 15-16, 21, and 23-24: Blanc discloses using a carrier gas comprising argon (Page 918 section 2.2.1).

Claims 18 and 27: Blanc discloses using a pressure of 15 Torr (Page 918 section 2.1).

Claim 52: Blanc discloses using a temperature in the range as claimed (Page 918 section 2.2.1).

8. Claims 1, 3-13, 15-21, 23-29, 30-33, 35, 47, 49-52, 54-56, 58-60, 62, 69-78, and 80-81 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed in view of Blanc.

Ahmed discloses a method of forming a dielectric waveguide using MCVD, wherein a first chalcogenide layer is deposited on the inside of the tube and then an oxide layer is deposited on the chalcogenide layer (Page 3, Page 5).

Ahmed teaches of MCVD deposition process rather than an rf or microwave induced plasma method for depositing the glass layers.

However, Blanc discloses using PECVD rather then the conventional MCVD results in high deposition rates and discloses the range of compositions and the number

of refractive modifiers are less limiting than in the MCVD method (Page 917 and 921). Blanc discloses using PECVD for both chalcogenide and oxide glass layers (Page 919). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Ahmed to use the PECVD method as suggested by Blanc with a reasonable expectation of success because Blanc to reap the benefits of depositing glasses with an increased range of composition and refractive modifiers.

Claims 3-5, 7-9: Blanc discloses using rf or microwave induced plasma (Page 918 section 2.1).

Claims 11, 12, 19 and 20: Blanc discloses using chloride compounds (Page 918, section 2.2).

Claims 13, 15-16, 21, and 23-24: Blanc discloses using a carrier gas comprising argon (Page 918 section 2.2.1).

Claims 18 and 27: Blanc discloses using a pressure of 15 Torr (Page 918 section 2.1).

Claim 52: Blanc discloses using a temperature in the range as claimed (Page 918 section 2.2.1).

Claim 57: Ahmed in view of Blanc discloses all the limitations of this claim, however, they fail to explicitly disclose a polymer layer farther away from the core then the first and second glass layers. However, Ahmed clearly discloses arranging the layers of very different refractive indices is a result effective variable wherein the proper arrangement of high-index and low-index determines the properties of the optical fiber (Pages 23-24).

Therefore it would have been obvious to one skill in the art at the time of the invention was made to determine the optimal placement for each of the first glass layer, second glass layer, and polymer layer used in the process of Ahmed in view of Blanc, through routine experimentation, to impart the optical fiber with the appropriate contrast between the high and low index layers to impart the fiber with the desired properties.

Claims 69 and 70: Ahmed discloses a refractive index difference between the first and second layer within the range as claimed (page 10).

Claim 71: Ahmed discloses the layers of the chalcogenide and oxide are layers of a preform and the method comprises drawing the preform to form a photonic crystal fiber (Page 9).

Claim 72: Ahmed discloses the fiber includes a core and a confinement region, wherein the confinement region includes the oxide and chalcogenide layers (Page 7).

Claim 73: Ahmed discloses the core has a lower average index that the confinement region (Page 24).

Claim 74: Ahmed discloses using a polymer dielectric layer in the confinement region (page 7).

Claim 75: Ahmed in view of Blanc fails to explicitly disclose a polymer layer farther away from the core then the first and second glass layers. However, Ahmed clearly discloses arranging the layers of very different refractive indices is a result effective variable wherein the proper arrangement of high-index and low-index determines the properties of the optical fiber (Pages 23-24).

Therefore it would have been obvious to one skill in the art at the time of the invention was made to determine the optimal placement for each of the first glass layer, second glass layer, and polymer layer used in the process of Ahmed, through routine experimentation, to impart the optical fiber with the appropriate contrast between the high and lox index layers to impart the fiber with the desired properties.

Claims 76 and 77: Ahmed discloses including alternating and repeating layer in the confinement region (Page 7).

Claim 80 and 81: Ahmed is concerned with forming a photonic crystal fiber, which is configures to guide radiation of a wavelength (page 3), and Ahmed discloses a refractive index difference between the first and second layer within the range as claimed (page 10).

9. Claims 12 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 085 in view of Blanc and further in view of US Patent 5344792 by Sandhu et al. hereafter Sandhu

EP 085 in view of Blanc teaches supplying the reactants using argon as the carrier gas but fails to disclose using nitrogen. However, because Sandhu discloses, at column 6, lines 40-44, nitrogen is a known equivalent for argon during PECVD processes. Substitution of equivalents requires no express motivation. *In re Fount*, 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152, USPQ (CCPA 1967).

10. Claims 12 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed in view of Blanc and further US Patent 5344792 by Sandhu et al. hereafter Sandhu

Ahmed in view of Blanc teaches supplying the reactants using argon as the carrier gas but fails to disclose using nitrogen. However, because Sandhu discloses, at column 6, lines 40-44, nitrogen is a known equivalent for argon during PECVD processes. Substitution of equivalents requires no express motivation. *In re Fount*, 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152, USPQ (CCPA 1967).

11. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP 085 in view of Blanc and further in view of Francis et al. (5,609,660).

EP 085 in view of Blanc discloses a glass tube rather than a polymer. However, because Francis discloses at col. 3, lines 15-30 that polymeric optical fibers are useful for forming optical waveguides, it would have been obvious to use a polymeric tube for the layers of chalcogenide glass as this is a conventional waveguide material.

12. Claims 34, 61, and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahmed in view of Blanc and further in view of Francis et al. (5,609,660).

Ahmed in view of Blanc discloses a glass tube and also discloses using polymers, such as polysulfones and fluoropolymers (Ahmed page 15), but fails to disclose using the polymer as the tube. However, because Francis discloses at col. 3,

lines 15-30 that polymeric optical fibers are useful for forming optical waveguides, it would have been obvious to use a polymeric tube, including those disclosed by Ahmed as useful for optical fibers, for the layers of chalcogenide glass and oxide as this is a conventional waveguide material.

Allowable Subject Matter

13. Claims 42 and 43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of the prior art cited or reviewed by the examiner alone or in combination teaches or reasonably suggests using a nitrous oxide gas, which is inert to chalcogenide glass, converting the nitrous oxide gas to second compound to deposit an oxide glass.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Turocy whose telephone number is (571) 272-2940. The examiner can normally be reached on Monday-Friday 8:30-6:00, No 2nd Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David Turocy

AU 1762

TIMOTHY MEEKS
SUPERVISORY PATENT EXAMINER